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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/581,281

05/31/2006

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23-65037-09

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EXAMINER

GARDNER, SHANNON M

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

04/30/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/581,281 | <b>Applicant(s)</b><br>OLSEN ET AL. |  |
|                              | <b>Examiner</b><br>Shannon Gardner   | <b>Art Unit</b><br>1795             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2006 (Prelim. Amend.).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____.                                     |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/26/2009; 2/03/2009; 9/16/2008; 4/15/2008;</u>               | 6) <input type="checkbox"/> Other: _____.                         |
| <u>2/27/2008; 5/31/2006.</u>   |   |



## **DETAILED ACTION**

### ***Remarks***

The Requirement for Restriction/Election dated 3/20/2009 is withdrawn in view of Applicant's Preliminary Amendment dated 5/31/2006. Currently claims 37-66 are pending in the application and are considered on their merits below.

### ***Claim Objections***

1. Claim 53 is objected to because of the following informalities: claim 53 currently depends from claim 51. It appears that Applicant intended claim 53 to depend from independent claim 50 and the claim will be treated as such for the purposes of this action. Appropriate correction is required.
2. Claims 38-44 are objected to because of the following informalities: claim 38 currently depends from itself (claim 38). It appears that Applicant intended claim 38 to depend from independent claim 37 and the claim will be treated as such for the purposes of this action. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 50 and 60-66 rejected under 35 U.S.C. 102(b) as being anticipated by Albsmeier et al. (WO 02/095707, cited in IDS).

As to claim 50, Albsmeier is directed to an apparatus for generating electrical energy (Figure 1) from an environment having a first temperature region and a second temperature region comprising a thermoelectric device (1) having a first side and a second side wherein the first side is in communication with a means for transmitting ambient thermal energy collected in the first temperature region (see abstract).

Regarding claims 60-66, the reference teaches the apparatus further comprising a means for alternately storing and discharging electrical energy produced by the thermoelectric device consisting of a capacitor (7), at least one sensor powered by electrical energy from the capacitor (8), at least one transmitter powered by the capacitor and capable of transmitting data gathered by the sensor (5, 6), a voltage amplified for amplifying the voltage of electrical energy generated by the thermoelectric device (3), and one microprocessor capable of processing the data and data storage means capable of storing the data (4) (see abstract and Figure 1).

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 37-47 and 50-59 are rejected under 35 U.S.C. 102(e) as being anticipated by Stark et al. (US 2004/0231714, cited in IDS).

As to claim 37, Stark is directed to a method for providing electrical energy to an electrical device (Figure 1) in an environment having a first (20) and a second temperature region (22) comprising the steps of:

- Providing a means for transmitting ambient energy collected in the first temperature region (14),
- Providing a thermoelectric device (10) having a first side (top) and a second side (bottom),
- Providing the means for transmitting the ambient energy collected in the first temperature region in communication with the first side of the thermoelectric device (20 in contact/communication with 14), and
- Providing the second side of the thermoelectric device in communication with the second temperature region (12 in contact with 22) (also see paragraphs [0029]-[0031]).

Regarding claim 38, Stark teaches the thermoelectric device consisting of thin film semiconductor assembled in alternating p- and n-type arrays (Figure 2 and [0029]).

Regarding claims 39-42, it is noted that these claims do not positively limit the scope of the claims from which they depend since the option of having thin film

Art Unit: 1795

semiconductors is still present. These claims are therefore rejected by the disclosure of Stark, as discussed above in addressing claims 37 and 38.

Regarding claims 43-44, Stark teaches the thin film semiconductors being selected as having p-type materials fabricated of bismuth telluride; and n-type semiconductor materials fabricated of bismuth telluride sputter deposited as thin films on a substrate (paragraphs [0023]-[0024]).

Regarding claims 45-47, Stark teaches providing a second means for transmitting ambient energy collected in the second temperature region (22) by transferring energy by conduction (see paragraphs [0029]-[0031] and Figure 1).

As to claim 50, Stark is directed to an apparatus for generating electrical energy (Figure 1) from an environment having a first temperature region (20) and a second temperature region (22) comprising a thermoelectric device having a first side (top) and a second side (bottom) wherein the first side is in communication with a means for transmitting thermal energy collected in the first temperature region (20 to 14).

Regarding claim 51, Stark teaches the thermoelectric device consisting of discrete element semiconductor (thin film semiconductors) assembled in alternating p- and n-type arrays (Figures 2-3 and [0029]).

Regarding claim 52, it is noted that this claim does not positively limit the scope of the claim from which it depends since the option of having discrete element semiconductors is still present. The claim is therefore rejected by the disclosure of Stark, as discussed above in addressing claims 50-51.

Regarding claims 53-56, Stark teaches the p- and n-type arrays being connected electrically in series (abstract) wherein the p-type and n-type arrays are thin film semiconductors of bismuth telluride sputter deposited as thin films on a substrate (paragraphs [0023]-[0024]).

Regarding claims 57-59, Stark teaches providing a second means for transmitting ambient energy collected in the second temperature region (22) by transferring energy by conduction (see paragraphs [0029]-[0031] and Figure 1).

7. Claims 37-40, 43-53, 57-59, 60-61 and 64 are rejected under 35 U.S.C. 102(e) as being anticipated by Luo (US 2004/0094192, cited in IDS).

As to claim 37, Luo is directed to a method of providing electrical energy (Figure 1) with a means for transmitting ambient energy collected in a first temperature region (heat collector), a thermoelectric device provided with a first and second side (thermoelectric cooling device), the means for transmitting energy in communication with the first side of the thermoelectric device (dotted line pointing to the thermoelectric cooling device), and providing the second side in communication with the second temperature region (bottom of device in contact with heat sink).

Regarding claims 38 and 40, Luo teaches the thermoelectric device being comprising of discrete element semiconductors assembled in alternating p-and n-type arrays connected in series (Figures 2 and 3).

Regarding claims 39 and 43-44, it is noted that these claims do not positively limit the scope of the claims from which they depend since the option of having discrete



Art Unit: 1795

element semiconductors is still present. These claims are therefore rejected by the disclosure of Luo, as discussed above in addressing claims 37 and 38.

Regarding claims 45-47, Luo teaches a second means for transmitting energy in the second temperature region (dotted line going to the heat sink) and the means of transmitting selected as transferring energy by conduction.

Regarding claims 48-49, Luo teaches a temperature difference of 15°C (paragraph [0029]) can produce electrical power.

As to claim 50, Luo discloses an apparatus for providing electrical energy (Figure 2) including a means for transmitting ambient energy collected in a first temperature region (19), a thermoelectric device provided with a first and second side (elements between 121 and 122), the means for transmitting energy communication with the first side of the thermoelectric device (heat collector, 19) in thermal contact with 111 and thus 121.

Regarding claims 51 and 53, Luo teaches the thermoelectric device being comprising of discrete element semiconductors assembled in alternating p- and n-type arrays connected electrically in series (Figures 2 and 3).

Regarding claim 52, it is noted that this claim does not positively limit the scope of the claim from which it depends since the option of having discrete element semiconductors is still present. The claim is therefore rejected by the disclosure of Luo, as discussed above in addressing claim 51.

Regarding claims 57-59, Luo teaches a second means for transmitting energy in the second temperature region (Figure 2; dotted line going to the heat sink) and the means of transmitting selected as transferring energy by conduction.

Regarding claims 60, 61 and 64, Luo teaches a means for storing electrical energy (battery), a voltage amplifier/voltage converter (see Figure 1).

***Contact/Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shannon Gardner whose telephone number is (571)270-5270. The examiner can normally be reached on Monday to Thursday, 8am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571.272.1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/581,281  
Art Unit: 1795

Page 9

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